

conditions). Race 1 of the halo blight bacterium did not survive as readily as the Nebraska No. 16 isolate under either the moist or air dry series. Race 1 was not recovered in the moist series for the six-week period. The orange wilt, yellow wilt, brown spot, common blight, and fuscous blight bacteria were readily recovered in the air-dry but to a lesser extent in the moist series.

### C. Conclusions

The data demonstrate the importance of infested straw on the survival and overwintering and possible dissemination of several bean bacterial pathogens. Since placement of infested straw on the soil surface favors survival, plowing under and/or proper disposition of bean straw infested with the pathogens is a suggested cultural practice.

Survival of the bean bacterial pathogens in air-dry soil emphasizes the possible dissemination of the bacteria in soil mixed with infested leaf pieces or debris. Dissemination is thus possible during the growing season during dry, windy conditions or under irrigation; with the subsequent occurrence of wet periods infections can then result.

Plant parts or soil containing the pathogens could provide inoculum for bean surfaces during harvesting, threshing, and cleaning procedures. Non-host plants (e.g., weeds) may also harbor pathogenic bean bacteria and, therefore, control of the non-host plants would be an additional cultural control suggestion, as would crop rotation.

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### "APOLLO" SNAP BEAN

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The garden bean variety "Apollo" was released (about 10,000 lbs. to U. S. Seedsmen), in September 1969, by the U. S. Department of Agriculture, CRD-ARS-V&ORB, Bean and Pea Investigations, in cooperation with the Washington Agricultural Experiment Station.

"Apollo" is a green-podded, white-seeded, bush snap bean, with pods borne high on the plant, concentrated maturity, and is well adapted to mechanical harvesting in the major U. S. processing areas. Maturity, yield, processing uses and quality are very similar to other white-seeded Tendercrop types. "Apollo" is resistant to all known strains of bean common mosaic virus, the Australian summer death virus, and the curly top virus. Summer death in Australia has reached epidemic proportions (with heavy losses) in recent seasons.

Resistance to curly top will not only allow the development of new bean processing areas in the west (Eastern Washington, Oregon, and Idaho);

but will also make possible alternate seed production areas (like the Columbia Basin of Central Washington), which will help insure a more dependable source of seed supply to the nation's snap bean canners, freezers, and home gardeners.

Commercial quantities of "Apollo" seed should be available to processors by the 1971 season. Limited trial samples for the 1970 season are available through M. J. Silbernagel.

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### CURLY TOP VIRUS SCREENING SERVICE FOR SNAP BEAN BREEDERS

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As in the past few years, anyone wishing to take advantage of our excellent natural exposure to the curly top virus disease, in order to screen their early generation bean hybrid lines for resistance, is welcome to submit 30 to 40 entries (15' per row) in our curly top screening trials.

To best facilitate the development of curly top-resistant varieties, it is suggested that F1 and F2 hybrid populations between curly top-resistant and susceptible parent lines be grown on your own trial grounds. Single plant selections of promising F2 lines should be segregating about 9 to 7 in most cases, for resistance to curly top. The following season, plant part of each F2 single plant selection (F3 seed) in your own nursery and send part of it (even as little as 20 to 30 seeds) to Prosser for a curly top screening test. By early July, under normal curly top exposure conditions at Prosser, I should be able to report to you which lines are resistant, which are segregating, and which are susceptible. In this way, you will be able to concentrate selection for horticultural and agronomic refinements on those lines in your nursery which you know are carrying resistance to curly top. At least one additional subsequent screening will be necessary to determine whether your resistance was homozygous or heterozygous. In this way, curly top breeding can be carried on by state and/or private seed company breeders who do not have access to good curly top screening facilities. Material entered in these trials is strictly confidential, and ordinarily plowed under after the curly top tests. However, anyone desiring to harvest their own resistant material may make special arrangements.

Planting date is approximately June 1. Anyone wishing to enter material, please let me know by May 1, if possible. Please package the seed, treated and ready for planting in 15-foot rows.

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